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THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN. MANUAL OF INSTRUCTIONS FOR ADMINISTERING AND SCORING SIGEL CONCEPTUAL STYLE SORTING TASKS.

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THIS MANUAL DESCRIBES MEASURES USED IN "THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN" PROJECT AT THE UNIVERSITY OF CHICAGO. THE SAMPLE FOR THE STUDY CONSISTED OF 163 NEGRO MOTHER-CHILD PAIRS SELECTED FROM 3 SOCIOECONOMIC CLASSES BASED ON THE FATHER'S OCCUPATION AND THE PARENTS' EDUCATION. A FOURTH GROUP INCLUDED FATHER-ABSENT FAMILIES. THE MOTHERS WERE INTERVIEWED AT HOME AND THE MOTHERS AND CHILDREN WERE TESTED AT THE UNIVERSITY OF CHICAGO WHEN THE CHILDREN WERE 4 YEARS OLD. FOLLOW-UP DATA WERE OBTAINED WHEN THE CHILDREN WERE 6 AND AGAIN WHEN THEY WERE 7. THE SIGEL CONCEPTUAL STYLE SORTING TASK WAS ADMINISTERED AT THE FIRST UNIVERSITY TESTING SESSION. THE MOTHERS WERE SHOWN BLACK-AND-WHITE PAPER CUTOUTS OF HUMAN FIGURES WHICH HAD BEEN PLACED RANDOMLY ON A TABLETOP, AND THEY WERE ASKED TO PICK OUT ONE GROUP OF FIGURES HAVING A COMMON CHARACTERISTIC. THE REACTION TIME TAKEN BEFORE THE SUBJECT PICKED UP THE FIRST FIGURE WAS RECORDED, AND THE REASON OFFERED FOR THE GROUPING WAS RECORDED VERBATIM. THE MOTHER WAS ASKED TO MAKE 11 ADDITIONAL SORTS USING A DIFFERENT REASON FOR EACH GROUPING. THE CHILDREN WERE TESTED WITH 15 SETS OF BLACK-AND-WHITE PICTURES AND 5 SETS OF BLACK-AND-WHITE CUTOUTS. EACH SET HAD 4 ITEMS WHICH THE CHILD WAS SHOWN. ONE ITEM WAS SELECTED BY THE TESTER AS THE PRESENTATION PICTURE. THE CHILD WAS ASKED TO IDENTIFY THE 3 REMAINING ITEMS AND TO PICK THE ONE THAT BELONGED WITH THE PRESENTATION PICTURE. THE CHILDREN WERE ASKED TO GIVE REASONS FOR THEIR SELECTIONS. THE SCORING CATEGORIES WERE THE SAME FOR THE MOTHERS AND CHILDREN, AND FOLLOW DR. IRVING E. SIGEL'S CATEGORIES OF DESCRIPTIVE, FUNCTIONAL, AND CATEGORICAL CRITERIA. THE SUBJECTS WERE SCORED FOR BOTH THEIR SORTING AND THEIR VERBAL RESPONSES. THE COMPLETE SET OF PROJECT MANUALS COMPRISES PS 000 475 THROUGH PS 000 492. (DR)

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# THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

Robert D. Hess, Principal Investigator

## MANUAL OF INSTRUCTIONS

## FOR ADMINISTERING AND SCORING

## SIGEL CONCEPTUAL STYLE SORTING TASKS

The measures described in this manual were developed in the project, Cognitive Environments of Urban Pre-School Children, supported by: Research Grant #R-34 from the Children's Bureau, Social Security Administration, and the Early Education Research Center, National Laboratory in Early Education, Office of Education, both of the U.S. Department of Health, Education, and Welfare; the Division of Research, Project Head Start, U.S. Office of Economic Opportunity; the Ford Foundation Fund for the Advancement of Learning; and grants-in-aid from the Social Science Research Committee of the Division of Social Sciences, University of Chicago.

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# THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

The research sample for the Cognitive Environment Study was composed of 163 pairs of Negro mothers and their four-year-old children, from three socioeconomic classes, defined by father's occupation and parents' education: upper-middle, professional and executive, with college education; upper-lower, skilled and blue collar, with high school education; lower-lower, semiskilled and unskilled, with no greater than tenth-grade education; a fourth group included father-absent families living on public assistance, otherwise identical to the lower-lower class group.

Subjects were interviewed in the home, and mothers and children were brought to the University of Chicago campus for testing, when the children were four years old. Follow-up data were obtained from both mother and child when the child was six years of age, and again at seven years.

Principal Investigator for the project is Professor Robert D. Hess, formerly Director, Urban Child Center, University of Chicago, now Lee Jacks Professor of Child Education, School of Education, Stanford University.

Co-Investigator for the follow-up study is Dr. Virginia C. Shipman, Research Associate (Associate Professor) and Lecturer, Committee on Human Development, and Director, Project Head Start Evaluation and Research Center, University of Chicago, who served as Project Director for the pre-school phase of the research.

Dr. Jere Edward Brophy, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, was Project Director for the follow-up study and participated as a member of the research staff of the pre-school study.

Dr. Roberta Meyer Bear, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, participated as a member of the research staff during the pre-school and follow-up phases of the project and was in charge of the manuscript preparation during the write-up phase of the research.

Other staff members who contributed greatly to the project include Dr. Ellis Olim (University of Massachusetts, Amherst), who was responsible for the major analysis of maternal language; Dr. David Jackson (Toronto, Ontario), who was involved in early stages of development of categories for the analysis of mother-child interaction, and participated in the processing and analysis of data; Mrs. Dorothy Runner, who supervised the training and work of the home interviewers, acted as a liason with public agencies, and had primary responsibility for obtaining the sample of subjects; and Mrs. Susan Beal, computer programmer.

COGNITIVE ENVIRONMENT STUDY

MANUAL FOR SIGEL CONCEPTUAL STYLE SORTING TASKS *

SUMMER 1967

## MOTHER'S SIGEL CONCEPTUAL STYLE SORTING TASK

### INTRODUCTION

During the first testing session at the University, mothers were administered the adult form of the Sigel Conceptual Style Sorting Task. Materials were black-and-white paper cutouts of human figures, from the Make-A-Picture-Story Test (MAPS).

### ADMINISTRATION

The tester spread the figures randomly on a table, with no obvious groups placed next to one another (e.g., males, females, nudes, uniformed figures, shading, etc.). The subject was instructed:

YOU SEE BEFORE YOU PICTURES OF PEOPLE. I WANT YOU TO PICK OUT AND PUT INTO ONE GROUP ALL THOSE FIGURES THAT ARE ALIKE OR THE SAME IN ANY WAY OR GO TOGETHER IN SOME WAY. YOU MAY HAVE AS MANY OR AS FEW FIGURES IN YOUR GROUP AS YOU WISH, BUT I JUST WANT YOU TO MAKE ONE GROUP. DO YOU UNDERSTAND? ALL RIGHT, GO AHEAD.

Reaction Time was recorded, beginning immediately after the tester said, "Go ahead." The score was the number of seconds until the subject picked up the first figure.

After the subject had completed a sort, the tester recorded the figures selected and asked:

WHAT IS THE REASON YOU PUT ALL THESE TOGETHER?

The subject's response was recorded verbatim.

* This manual is based on the conceptual style sorting task procedures and coding categories developed by Dr. Irving E. Sigel, Director of Research, The Merrill-Palmer Institute, Detroit, Michigan.

The tester than replaced the figures randomly on the table, and said:

ALL RIGHT. NOW I WOULD LIKE YOU TO MAKE ANOTHER GROUPING, TAKING THOSE FIGURES THAT ARE ALIKE OR THE SAME OR GO TOGETHER IN ANY WAY, BUT THIS TIME ON THE BASIS OF A DIFFERENT REASON THAN YOU USED BEFORE. DO YOU UNDERSTAND? ALL RIGHT. GO AHEAD.

Once the sort was made, the subject was asked for a reason. Again, reaction time, the figures selected, and the verbatim response were recorded.

This procedure was repeated until the subject made 12 groupings or sorts. After two or three sorts, instructions were reduced to:

ALL RIGHT. I WOULD LIKE TO MAKE ANOTHER GROUPING BUT AGAIN ON THE BASIS OF A DIFFERENT REASON.

COGNITIVE ENVIRONMENT STUDY

MANUAL FOR SIGEL CONCEPTUAL STYLE SORTING TASKS

SUMMER 1967



## CHILD'S SIGEL CONCEPTUAL STYLE SORTING TASK

### INTRODUCTION

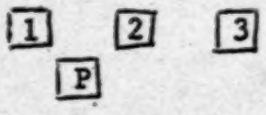
During the second testing session at the University, the four-year-old children were administered the children's form of the Sigel Conceptual Style Sorting Task. Materials included fifteen sets of black-and-white photographs of common objects, animals, and humans, and five sets of black-and-white cut-out paper figures from the Make-A-Picture-Story Test (MAPS). Each set was composed of a presentation picture and three choice pictures:

| | Pictures | | |
|---|---|---|---|
| Presentation | 1 | 2 | 3 |
| 1. tomato | banana | orange | pear |
| 2. duck | fish | camel | hen |
| 3. chair | dresser | table | rocking chair |
| 4. MAPS #6 | MAPS #11 | MAPS #9 | MAPS #101 |
| 5. stagecoach | sailboat | airplane | jeep |
| 6. smiling cowboy | smiling man | neutral policeman | ranch |
| 7. banana | green beans | grapes | celery |
| 8. MAPS #71 | MAPS #72 | MAPS #3 | MAPS #108 |
| 9. cow | elephant | horse | sheep |
| 10. bed | cradle | chest | lamp |
| 11. baby | playpen | girl | man |
| 12. bread | tomato | apple | ham slice |

| | | | |
|---|---|---|---|
| 13. MAPS #68 | MAPS #32 | MAPS #31 | MAPS #18 |
| 14. Truck | dog | horse | sheep |
| 15. ranch | stagecoach | horse | cowboy |
| 16. MAPS #107 | MAPS #118 | MAPS #5 | MAPS #67 |
| 17. tractor | engine | rocket ship | boat |
| 18. fireman | fire station | soldier | policeman |
| 19. smiling nurse | neutral nurse | smiling stewardess | sad stewardess |
| 20. MAPS #109 | MAPS #112 | MAPS #104 | MAPS #105 |

## ADMINISTRATION

The presentation picture was placed on a table in front of the child, with three choice pictures immediately above it, aligned horizontally to the child's right (to his left if left-handed):




As the tester pointed to each of the four pictures, the child was asked to name it. His response was recorded, whether correct or not. A wrong label was not corrected, nor was the child given the name if he did not know it.

The tester instructed the child:

TAKE ONE OF THESE (pointing to three choice pictures) THAT BELONGS WITH THIS OR LOOKS LIKE IT (pointing to presentation picture) AND PUT IT WITH THIS ONE (presentation picture; i.e., the child was told to place his choice next to the presentation picture, under #3 in the figure above).

Acceptable alternative wordings of the instructions include:

TAKE (PICK OUT) THE ONE (OF THESE) THAT GOES WITH THIS (ONE), etc.

or

TAKE ONE OF THESE AND PUT IT WITH THIS (THAT) ONE.

the selection was recorded, and the child was asked as the tester indicated the presentation picture and the one the child had selected:

WHY DO THESE GO (BELONG) TOGETHER?

or

WHY DID YOU PICK THIS ONE?

If the child gave no reason, but repeated the labels, or pointed to the pictures, the tester said:

TELL ME ABOUT THESE.

If the child said "because they're the same," the tester asked:

IN WHAT WAY ARE THEY THE SAME?

The tester continued to encourage the child to tell her the basis of his sort, how the figures were the same, why they went together, until the child gave a scorable verbal response, or persisted in a nonscorable or nonverbal response.

"How are they alike?" was not asked, since young children, especially lower-class children, are not as familiar with the word "alike" as they are with "the same" or "goes with".

COGNITIVE ENVIRONMENT STUDY

SCORING MANUAL FOR SIGEL CONCEPTUAL STYLE SORTING TASKS



## INTRODUCTION

All subjects in the Cognitive Environment Study -- mothers and their four-year-old children -- were administered Sigel Conceptual Style Sorting Tasks during testing sessions at the University. Although the material and instructions differ for the adult and child versions of the task, the formal scoring categories are the same. In each task, the subject is asked to make a "conceptual sort": the child is asked to select one of three items to go with a presentation picture; the mother, to group together two or more figures from a large array. And in each task the subject is asked to explain his sort, to tell why the items go together. The formal coding categories described in this manual apply to that verbal response and refer to the subject's conceptualization of the similarities and relationships among the items constituting a sort. Possible bases for sorts include descriptive or stimulus-centered concepts, relational or functional concepts, and categorical or inferred-class concepts. The subject may offer a verbal response which cannot be scored, such as a disjunctive statement or a vague reference. He may be unable to verbalize the concept, in which case he is credited for having made a sort but receives a score for nonverbal conceptualization; or the subject may be unable to make a sort, in which case he receives a score for a non-sort.

## FORMAL SCORING CATEGORIES

1. Descriptive: (Stimulus Centered) Concepts which are derived directly from the physical attributes of the stimulus and ones in which the conceptual label contains a direct reference to a physical attribute present in the stimulus. Descriptive responses are of two types: Analytic (Part-whole) and Global.

Descriptive-Analytic or Part-whole:

D-1: Sorts in which the physical attributes or properties of the materials presented are the basis of similarity; e.g., color (black and white only), texture, shading, shape, or size.

D-2: Sorts in which the description of physical attributes of the objects or figures depicted are employed: e.g., heads, legs, wheels, guns, holding objects in their hands, clothing (uniforms, well-dressed, casually dressed, professional dress), baldness, hair color, static posture (prone position, sitting position), nudity (lack of clothing, they are nude but not "These are nudes." Latter considered class of nudes and scored for D-3), crippled or physical disability (physical injury, physical handicap), etc. (smiling, frowning, straight mouths on human figures other than MAPS also included).

Descriptive-Global:

D-3: Sorts in which the label designates the status, occupation, etc. where the cues are manifest in the stimulus; e.g., policeman, soldiers or army men, nurses, nudes, boats, trucks, etc.

D-4: Sorts in which discrete age categories are employed; e.g., children, old people, adults, babies, young people, etc.

D-5: Sorts in which one of the sexes is grouped; e.g., males, females.

D-6: Sorts based on age and sex; e.g., old men, young women, boys, girls, etc.

Descriptive-Analytic or Part-whole (objects only):

D-7: Sorts based on or dealing specifically with the physical attributes or structural material; e.g., wood, plastic, steel, etc. (Does not apply to MAPS figures.)

II. Relational-Contextual: Concepts which are used to tie together (or relate) two or more people or objects. In this category no stimulus is an independent instance of the concept; any one stimulus gets its meaning from a relationship with the other stimuli; e.g., a mental hospital scene, a family scene, the horse pulls the stagecoach. The relationship must be between the stimuli in the subject's sort and not between the stimuli and any external factor brought in by the subject. For example, "These people all belong in a mental hospital" is not scored as relational since there is no hospital present and no interaction among the stimuli in the sort--each stimulus is independent of every other stimulus. However, "This is a mental hospital scene. These are the patients and this is the doctor who is treating them," is scored as relational since no stimulus is an independent instance of concept, "mental hospital scene."

R-1: Thematic: Sorts which are based on themes, plots, or stories where no category is used; e.g., he killed this man, she is giving him food, the boy is helping the blind man to cross the street, etc.

R-2: Geographical: Sorts in which the instances are related in space--locale, geographic, domiciliary, etc.--where the spatial reference is not an external factor but is one of the stimuli in the sort; e.g., the wac and the soldier belong on the army base, these tools belong in the trunk of the car, these animals belong on the ranch.

R-3: Temporal: Sorts in which the figures are grouped on the basis of the temporal development of the individual; e.g., this is a person growing up, these are the stages of man; or temporal sequence; e.g., before and after of a crime.

R-4: Comparative: Sorts based on comparison between two or more stimuli; e.g., better than this one, different from this one, one is dressed casually and the other formally.

R-5: Functional: Sorts in which objects are grouped together on the basis of their interdependent use or function, behavior or activity; e.g., the steam shovel digs sand to put on the truck, sit on a chair to eat at the table, ham and bread are used to make a sandwich, the horse pulls the stagecoach, all these objects make up a home.

R-6: Sorts in which figures are grouped on the basis of an understood relationship state between them.

A. Kinship: a family group, husband and wife, mother and child, brother and sister, etc.

B. Other Relationship States: Doctor-nurse, teacher-student life drawing class, etc.

R-7: Conditional: Sorts in which the stimuli are related conditionally; e.g., if this, then that.

Note: All sub-categories grouped together
Score for "R" in general only.

III. Categorical-Inferential: A group of figures or objects are put together where each stimulus in the sort is representative of the total class. These sorts are based on inferred or non-observable characteristics of the stimuli, each instance is not interdependent, and a class label is used--it is an inference. (Note: It must be kept in mind that the categorical response is not necessarily a conceptual one in the Goldstein or Werner sense. What we are dealing with in the following instance, "People ride in these." is a categorical response tied to a concrete reality in contrast to "These are vehicles," which would be a more objectifying and abstracting statement.)

MAPS SORTS (human figures only)

C-1: Sorts in which the figures are grouped on the basis of a common behavior, role, or participles of action: e.g., these people all work for a living, these people all do services, these people do something worthwhile or constructive, these people are walking, modeling, sleeping. Also motivational states; they are intent on committing a crime.

C-2: Sorts in which the objects are grouped on the basis of status, class or attributes; e.g., professional people, criminals, handicapped people, dignified people, solemn people, intelligent

looking, sick people, invalids, crippled, disabled, incapacitated, handicapped, people who need help, dead people, Negroes, Orientals, Caucasians, military people, these people represent justice or [illegible] tolerance or crime or physical health, these people have a persuasive expression or ordinary expression, suffering people, artistic people, medical people, clergymen.

C-3: Sorts in which the basis of similarity is a moral or aesthetic value or judgment.

A. Aesthetic: pretty, ugly, beautiful, attractive, etc.

B. Moral: good, bad, wicked, evil, "shady" looking character, malicious intentions, etc. (realm of right and wrong.)

C-4: Sorts in which figures are grouped on basis of a common affect or emotion: state; e.g., sad, unhappy, suffering, aggression, hostility, anguish, sorrow, suffering people, crying, violence, etc.

C-5: Sorts in which stimuli are grouped on basis of spatial reference--common locale, geographic, domiciliary, etc.; e.g., These people would all be found in a hospital, these people would all be in the street, or in a mental institution.

C-6: Sorts in which the basis of similarity is a sexual reference other than designation of sex of figures; e.g., these are the sexy ones, sensuousness, girls who think they know about life, look seductive.

## HUMAN AND OBJECT SORTS

C-1: Function, Use, or Behavior: (Includes all examples of C-1 for MAPS plus function and use for objects.) Examples are: things to build with, these carry people and freight, they swim in water, used for cutting, we eat these, these are rocking things, used to turn bolts, these are used by people.

C-2: Class-naming; e.g., professional people, homemakers, military men, human beings, furniture, farm animals, land vehicles, ways of transportation, foods.

C-3: Attributes: (Static traits of stimuli are basis of similarity--non-functional, non-action, non-affective states.) Examples: juiciness, tough skins, wildness, these grow on vines, these run by motors, these move on wheel, these are sharp, these are self-propelling, these are manufactured, these are inanimate, these can be eaten without cooking, these people are handicapped, these people can't walk, they are dependent.

C-4: Affect or Emotional State: (Does not apply to object sorts.) This category is the same as C-4 on MAPS with one exception: The terms--smiling, frowning--are scored as D-2 on human figures but as affect on MAPS figures.

C-5: Geographical: (Same as MAPS)

These people are found in the home, they belong in the jungle, see them in the zoo, grown on a farm, they go in the water, live on a farm. Note: The spatial reference is not one of the stimuli but is the only basis for the grouping. If there is another basis along with the spatial reference, score for the

former; e.g., "These swim in water" or "These are used on a farm" are scored as C-1.

C-6: Value judgment, moral judgment, or aesthetic judgment: (Same as C-3 on MAPS) For human figures would include: normal faces or normal expressions, look regular, look surprised, serious look on their faces (where specific affect or emotional state cannot be ascertained). Also, these (referring to foods) are good for you, these make you healthy, these (tools) are important for man. Egocentric responses, if they are the only basis for the sort, are included: e.g., I like these.

OBJECT SORTS (objects only)

C-7: Presumed constituent parts or attributes: Basis of similarity is unseen (non-manifest) parts or inferred attributes of stimuli: e.g., seeds, motors, colors other than black and white (the tomato and apple are red), these are solid, etc.

NONSCORABLE RESPONSES

Nonscorable:

Verbal: broad or vague statements: "looks like it", "the same", "just alike"; or disjunctive responses: "this is a truck and this is a horse".

Nonverbal: Subject makes a sort but does not verbalize a rationale; points, puts cards or figures edge-to-edge, on top of each other or otherwise together, or says "Don't know".

Nonsort: Subject is unable or refuses to make a sort.